Lower Joseph Creek Restoration Project

Range Report

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for:

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Wallowa Whitman National Forest

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Contents

Introduction

The LJCRP area is part of the Joseph Creek Rangeland Planning Area and encompasses portions of eighteen livestock grazing allotments. Lost Cow, Jim Creek, Chesnimnus, Crow Creek, and the Chico Horse Pasture have less than 200 acres each in the project area. Nine are managed under the Wallowa-Whitman forest plan, and four are managed under the HCNRACMP. Three allotments have portions of pastures in both Wallowa Mountain District and Hells Canyon National Recreation Area. Only the active allotments will be covered in more detail within this DEIS.

This report addresses the existing condition of Rangeland resources within the Lower Joseph Creek Restoration Project (LJCRP) area, and the expected and potential effects of the alternatives on the range resources and management. Direct, indirect, and cumulative effects of the alternatives are identified and discussed. The Wallowa Whitman Land and Resource Management Plan (LRMP) (USDA, 1990) as amended by the Lower Joseph Creek Wild and Scenic River Plan and the Hells Canyon National Recreation Area Comprehensive Management Plan provide management direction for the Lower Joseph Creek Restoration project.

Desired Condition

To manage range vegetation and related resource in a manner insuring that the basic needs of the forage and browse plants and the soil resource are met. To make available for harvest, forage production that is in excess to the basic needs of the plants and soil resource, for wildlife (within agreed upon management objectives) and domestic livestock (within Forest Plan utilization standards) (Wallowa-Whitman LRMP 1992).

Methods

Suitability: Information including existing vegetation, potential vegetation, and soils was used to make the capability and suitability identification. Capability depends upon current resource conditions and site conditions such as climate, slope, landform, soils, and geology, as well as the application of management practices, such as silviculture or protection from fire, insects, and disease. Once the capable rangeland is determined, acres that do not have a proposed management area prescription that would allow for grazing are subtracted. Administrative sites, recreation areas, and other areas of specific use are also subtracted, as are areas specifically closed to grazing by past actions or incompatibility of use between resources. Total land base acres minus (nonsuitable and noncapable) gives the modeled suitability determination. This is a landscape scale estimation based on GIS modeling and is not a site-specific determination.

Annual Forage Production: This measure has not been used on the WMO for many years, so there is no current data on actual forage production. Forage production estimates by potential vegetation groups (PVG) based on Johnson and Simon, Johnson and Clausnitzer, and Johnson and Swanson, compiled for the Blue Mountain Forest Plan Revision were used with the number of acres in allotments to give rough estimates of forage production in average pounds of forage per year. Production figures were developed by multiplying the pounds/acre for each PVG by the total number of acres in each vegetation group, capability group, and national forest. The total acres within each vegetation group were derived from the output of the range suitability modeling process described above. The production figures represent the current vegetation

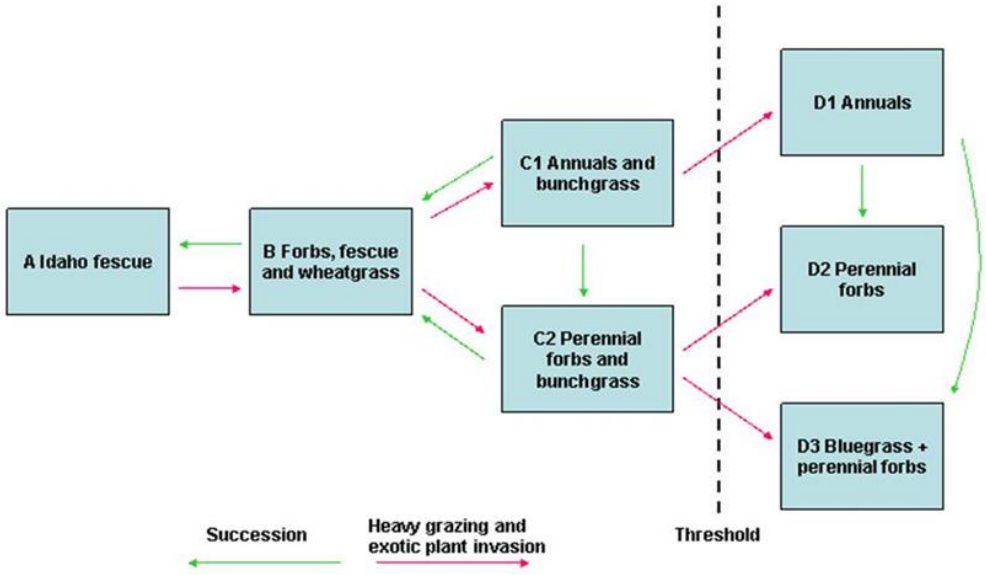
conditions, which in the case of the forested groups are heavily influenced by overstory canopy cover. In general, the higher the overstory canopy cover, the lower the understory production.

Forest Structure and Composition in relation to forage is described here as canopy cover and density. Range of variation information for tree density in dry and moist upland forest PVGs based on Powell 2012, 2013 was used. Overall quality of habitat on a landscape scale using percent departure from historic range of variability (HRV) by Potential Vegetation Groups (PVG) is given for coniferous forest (see section on Vegetation and Disturbance).

Range Condition: HRV for grasslands is described using the state and transition concept. According to the state and transition model, vegetation at a given site is determined by a complex set of interactions of past management, natural disturbances, soils, topography, climate, and seed sources and are described as a phase A through D where:

- **A** Vegetation is relatively pristine, close to the potential natural vegetation
- **B** Vegetation has been moderately altered by grazing to the point that grazing sensitive species (decreasers) are diminished but still present
- **C** Vegetation has been greatly altered by grazing but still retains enough native species to be able to recover to PNV
- **D** Vegetation has been altered by loss of native species and invasion of non-native species. This phase has crossed a transition to a new state, meaning return to PNV by natural succession is probably not possible (Johnson and Swanson 2005, Wesotby et al 1989).

Figure: Example of a State and Transition Model: Idaho fescue-Prairie Junegrass (Ridge) Plant Association and degenerated bench plant community type (Ecology Intranet Site version 2008).



Regulatory Framework

Land and Resource Management Plan

WWNF LRMP 4-51 to 4-54

Standards and Guidelines

Forage Allocation: Allocate forage resources on an allotment and/or management area specific basis to meet the basic plant and soils needs as the first priority. Forage production above that needed for basic resource needs may be allocated to wildlife (as provided for in agreed upon Management Objectives) and permitted livestock.

MA 3, 3a Timber/Wildlife emphasis:

Range. Give preference to big game where definite conflicts for forage are determined to exist between big game and livestock, and big game numbers are at or below State management objective levels.

HCNRA CMP

§ 292.48 Grazing activities.
The following standards and guidelines apply to domestic livestock grazing activities on Other Lands, Wild and Scenic Rivers, and Wilderness Lands in the HCNRA.
(a) Grazing may be authorized only on rangeland determined by the authorized officer to be suitable for grazing and meeting or moving towards satisfactory condition and meeting the conditions described in paragraph (b) of this section.
(b) Where domestic livestock grazing is incompatible with the protection, restoration, or maintenance of fish and wildlife or their habitats; public outdoor recreation; conservation of scenic, wilderness, and scientific values; rare combinations of outstanding ecosystems, or the protection and enhancement of the values for which a wild and scenic river was designated, the livestock use shall be modified as necessary to eliminate or avoid the incompatibility. In the event an incompatibility persists after the modification or modification is not feasible, the livestock use shall be terminated.
(c) Range improvements must be designed and located to minimize their impact on scenic, cultural, fish and wildlife, and other resources in the HCNRA.
(d) The authorization of grazing use, through a grazing permit, must provide for terms and conditions which protect and conserve riparian areas**.**
For-O2: Manage livestock grazing within forested stands to ensure ecological function and sustainability of understory vegetation consistent with management of overstory vegetation objectives. Use grazing-related standards and guidelines to manage grazed forested understory vegetation.(New)
Gra-O1: Manage grassland vegetation to ensure continued ecological function and sustainability of native ecosystems. Maintain and/or restore the ecological status of grassland communities to their PNC recognizing their HRV. (New)
Gra-G1: Emphasize enhancement and/or restoration of potential native vegetation. (New)**Gra-**
Gra-G2: Incorporate management considerations in *Plant Associations of the Wallowa-Snake Province* (Johnson and Simon 1987) to determine the appropriate timing, intensity, duration, and

frequency of grazing use by community type. Likewise, use *Mid Montane Wetlands Classification of the Malheur, Umatilla, and Wallowa- Whitman National Forests* (Crowe and Clausnitzer 1997) or other FS approved guides, score cards or keys. (New)
Gra-S5: Implement grazing management practices to minimize the potential for transport of invasive plant propagates or seeds, or creation of habitats suitable for establishment of invasive species. (New)
Gra-G4: Where feasible and desirable, plan and implement restoration projects to improve the health and sustainability of HCNRA grasslands, where current ecological conditions are mid- or earlier-seral status. (New)
Gra-S7: Range improvements would be designed and located to minimize their impact on wilderness, scenic, heritage, fish, wildlife, unique botanical, and other resources. (Public LURs, New)
Gra-G2: Where pastures currently contain nonnative rangeland vegetation, manage for recovery of native species. (New)
Fire-S2: Coordinate WFU and PF projects with permittees within active grazing allotments. (New)
Fire-G4: After fire, use an interdisciplinary team to determine when activities may resume in burned areas. Consider rest from domestic livestock grazing after burning. Coordinate with partners and permittees when setting up guidelines for management of burned areas. Use management strategies that will minimize the potential for introduction and/or spread of noxious weeds and other undesirable nonnative plants. Protect areas of active restoration from management impacts. (New)

Management Area

Management of range resources follows Wallowa-Whitman LRMP and HCNRA CMP standards and guides, respectively. For all management areas in LJCRP, satisfactory range condition will be achieved, as range allotment management plans are completed and implemented. The following management areas are found within LJCRP:

- MA1 Timber: Range Provide for protection of erosion seeding and tree plantations through changes in livestock management. In some instances, nonuse, fencing, or other means of control will be needed.
- MA3 Big Game Habitat: Range. Give preference to big game where definite conflicts for forage are determined to exist between big game and livestock, and big game numbers are at or below State management objective levels.
- MA 7 Wild and Scenic River (Joseph Creek): Range Permit domestic livestock grazing to continue, consistent with the objectives for individual river segments. Make range management structures visually compatible with river classification.
- MA 9 HCNRA Dispersed Recreation: Continue livestock grazing consistent with native vegetation production objectives. Enhance native vegetation through the use of appropriate range management techniques. Management will be designed to favor native vegetation over non-native vegetation. Although no attempt will be made to eradicate non-native species, further introduction will be avoided.
- MA 10 HCNRA Forage and MA 11 HCNRA Dispersed Recreation and Timber: Use any appropriate range management techniques (see HCNRA CMPs above direction is to manage for native vegetation).
- MA 12 Research Natural Areas (Horse Pasture Ridge, Haystack Rock): Objectives for grazing will be defined in situations where grazing is needed to establish or maintain

vegetative communities. In research natural areas were livestock grazing is not part of the management prescription, the Regional Forester and Station Director shall, as appropriate, establish a level of acceptable casual or incidental livestock use that can be tolerated and is consistent with the management prescription for the research natural area.

- MA 15 Old Growth Forest: Range Apply Forest-wide standards and guidelines.
- Inventoried Roadless areas (36 CFR Part 294): The Roadless Area Conservation rule, unlike the establishment of wilderness areas, will allow a multitude of activities including motorized uses, grazing, and oil and gas development that does not require new roads to continue in inventoried roadless areas. Range resources will benefit from reduced risk of spread of noxious weeds and non-native invasive plants. Operating costs will be unchanged (increased access can lower operating costs).

Federal Law

Organic Administration Act of 1897
Taylor Grazing Act of 1934
Granger-Thye Act of 1950
Multiple-Use Sustained-Yield Act of 1960
Wilderness Act of 1964
National Environmental Policy Act of 1970
Wild Horses and Burros Act of 1971
Forest and Rangeland Renewable Resource Planning Act of 1974
Federal Land Policy and Management Act of 1976
National Forest Management Act of 1976
Public Rangelands Improvement Act of 1978
Rescission Act of 1995

Executive Orders

Invasive Species, EO 13112 of February 3, 1999
Migratory Birds, EO 12962 of January 10, 2001
Environmental Justice, EO 12898 of February 11, 1994

State and Local Law

Regional Water Quality Control Board Requirements
Burn Permit –County Air Pollution Control District
Federal Permits, Licenses, or Other Entitlements

Other Guidance or Recommendations

36 CFR 222
Forest Service Manual 2200: This manual summarized laws and regulations governing rangeland management and forest planning.
Forest Service Handbook 2209.13: Grazing Permit Administration Handbook
Lower Joseph Rangeland Assessment
Allotment Management Plans
Non-Use for Resource Protection Agreements

Affected Environment

Existing Condition

There are eighteen allotments in LJCRP, four are in the HCNRA. Forage resources on these allotments are dominated by rangeland plant associations that include lithosols (scablands), and bunchgrass grasslands with both the Idaho fescue series, and bluebunch wheatgrass series. Dominant open-forested plant associations where livestock use occurs are dry forest ponderosa pine series and Douglas-fir series (Johnson 1987). Much of the LJCRP area occurs in the Warm/Dry Grand Fir plant association groups. The project area also includes non-native perennial and annual grasses and forbs from past management activities, especially in open-forested areas.

Fire suppression practices in dry upland forests have indirectly allowed shade tolerant tree species to gradually increase in density and size, shading out herbaceous forage species in LJCRP area. Fire suppression has also allowed tree encroachment into stringer meadows, and grasslands have been filling with shrubs, where moisture and soil depth permit. While fire has historically played an important role in all vegetation types, moist upland forests have shrub dominated understories, sometimes with pinegrass as a co-dominant in the understory (Powell, et al 2007). While livestock can use shrubs and pinegrass for forage, neither are preferred forage during typical summer and fall grazing seasons (Habeck 1992, Matthews 2000, McWilliams 2000), for example, ungulates generally browse oceanspray (*Holodiscus discolor*) only when more palatable forage is unavailable (Fryer 2010) and ninebark (*Physocarpus malvaceous*) is generally avoided as browse. In Oregon, an exception is common snowberry which was found to be highly palatable to cattle (McWilliams 2000). It plays a critical role in permitting cattle to meet their protein requirements during the latter half of the growing season. Idaho fescue is the main grass selected most seasons by cattle and horses and by elk and sheep in spring (Zouhar 2000). Idaho fescue makes up 29% of cattle diets from June to October, it had more green leaves in summer than did other grasses, and it was sought out for regrowth in the late summer and fall (Zouhar 2000).

Wallowa County Natural Resources Advisory Council conducted range condition surveys, re-reading 28 USFS Condition and Trend (C&T) monitoring plots, and reading 28 NRCS Interpreting Indicators of Rangeland Health plots on USFS land. Details on methodology and results can be found in The Lower Joseph Watershed Assessment (Wallowa County Collaborative, 2014). In general, C&T plots showed an upward trend, with better vegetative cover, although there was some ambiguity due to placement and variations in how measurements have been recorded over the (~60 year) lifespan of the plots. C&Ts, are long term monitoring plots, many established fifty to sixty years ago. They were frequently placed in heavily used areas such as ridge tops, shoulders of ridges, and plateaus connecting ridges. The placement is in keeping with the key areas concept, which was to monitor ecologically representative areas receiving high use.

Indicators of Rangeland health plots showed generally positive results for most of the allotment pastures within the project area. Trouble spots were found in the following areas (Wallowa County Collaborative, 2014):

- Davis Creek, South Davis pasture has a greater than expected amount of bare ground and corresponding loss of native perennials, although current management does not seem to

be degrading conditions further. Davis Creek has a long history of use and disturbance occurring before current management practices were implemented.
- Swamp Creek, Miller pasture shows soil loss and degradation that developed prior to current management practices.
- Al-Cunningham, Shoot Canyon has invasive plants dominating the site.
- Cold Springs, North Wildhorse showed a loss of native perennial plants on spaces between mounds in another Idaho fescue- prairie junegrass mound site

Appendix: Map shows the locations of the pastures with soil stability issues.

Past management including grazing had negative impacts on forage condition. Cattle tend to congregate and travel on flat areas, such as ridgetops, and roads (Roath and Krueger, 1982). Cattle also tend to congregate and stay close to water sources, especially areas with steep topography (Roath and Krueger 1982, Kauffman, et al 1984, Gillen, et al 1984). Current management using herding, salting, fences, pasture rest and rotation, and monitoring have reduced resource impacts due to poor cattle distribution. However, past management effects are still present on the landscape.

The USFS (FS) uses two monitoring protocols to determine the condition of riparian areas: Multiple Indicator Monitoring (MIM) and Properly Functioning Condition (PFC) Assessments. A MIM Assessment is a quantitative assessment while a PFC is qualitative assessment of riparian and stream channel condition. For details on protocols for both see Lower Joseph Watershed Analysis 2014.

MIMs monitoring data collected in 2009-2010 by Wallowa County found that for stream bank stability and amount of fine sediment at each location, most of the sites are exhibiting reference conditions. The exceptions to this are Swamp 2, Swamp 3 and Swamp Creek 4 where fine sediment comprises 49% - 100% of the entire stream bottom, and stable banks at Swamp 2 are less than 80% (Lower Joseph Creek Watershed Assessment, 2014). PFC assessments found Davis and Sumac Creeks are the creeks needing improvement, both in management and in restoration activities. Swamp Creek also has areas needing assistance, especially with regards to erosion at cut banks and reed canary grass colonization. The problems in Sumac, Davis, and Swamp Creeks are likely a result of historic logging and grazing activities. Improved upland forage conditions should help riparian recovery (Lower Joseph Creek Watershed Assessment 2014).

Forage production

Information including existing vegetation, potential vegetation, and soils was used to make the capability and suitability identification. Capability depends upon current resource conditions and site conditions such as climate, slope, landform, soils, and geology, as well as the application of management practices, such as silvicultural treatments or protection from fire, insects, and disease. Once the capable rangeland is determined, acres that do not have a proposed management area prescription that would allow for grazing are subtracted. Administrative sites, recreation areas, and other areas of specific use are also subtracted, as are areas specifically closed to grazing by past actions or incompatibility of use between resources. Total land base

acres (minus nonsuitable and noncapable) gives the modeled suitability determination. This is a landscape scale estimation based on GIS modeling and is not a site-specific determination.

Annual forage production has not been used as a measure on the Wallowa Valley Ranger District for many years, so there is no current data on actual forage production. Table 32 displays forage production that can be expected by Potential Vegetation Group (2014 Forest Plan Revision adapted from Johnson and Simon 1982, Johnson and Clausnitzer 1990).

The following table shows acres of Potential Vegetation Groups for each allotment by pastures that are within the LJCRP area. Allotment names are in grey with total acres by PVG for the allotment, pastures in the allotment are listed below the allotment name. Cold Upland Herblands (mostly Idaho Fescue-Prairie Junegrass) was combined with Moist Upland Herbland. Low and Moderate Soil Moisture Riparian Herblands were combined into Meadows.

Table: Forage production that can be expected by Potential Vegetation Group (2014 Forest Plan Revision adapted from Johnson & Simon 1982, Johnson and Clausnitzer 1990).

Vegetation Group	Representative plant association	Forage production (pounds per acre per year)	Allotment Acres within LJCRP	Estimated Forage Production (avg lbs/year)
Dry Upland Forest	Grand fir/ pine grass	300 - 600 (450)	45994	20,697,300
Dry Upland Herbland	Bluebunch wheatgrass	400 - 800 (600)	35986	21,591,600
Dry Upland Shrubland	Stiff sagebrush / Sandberg's bluegrass	100 - 250 (200)	1007	201,400
Meadows	Kentucky bluegrass (dry meadow)	200 – 600 (400)	360	144,000
Moist Upland Forest	Grand fir / Twinflower	<200	9562	< 1,912,400
Moist Upland Herbland	Idaho fescue-bluebunch wheatgrass-balsamroot	200 - 1,730 (965)	4165	4,019,225

Table: Range of percent of the landscape with high, moderate and low density stands in dry upland forest and moist upland forest, respectively (Powell XXXX).

Tree density classes for dry upland forest	RV (%)	Current Condition in LJCRP (%)
Low (<40% canopy cover; <45 ft2/ac basal area; <81 tpa or sdi)	40-85	26
Moderate (40-50% canopy cover; 45-70 ft2/ac basal area; 81-121 tpa or sdi)	15-30	36
High (>50% canopy cover; >70 ft2/ac basal area; >121 tpa or sdi)	5-15	38
Tree density class for moist upland forest	**RV (%)**	**Current Condition in LJCRP (%)**
Low (<75% CC; <90 ft2/acre BA; <163 tpa or sdi)	20-40	18
Moderate (75-85% CC; 90-135 ft2/acre BA; 163-244 tpa or sdi)	25-60	34
High (>85% CC; >135 ft2/acre BA; >244 tpa or sdi)	15-30	46

Range Improvements

Permittees are responsible for maintaining fences and water developments as described in each permit. Approximately 205 miles of fence and 265 water improvements occur within the JCRAA and require maintenance. Maintenance and installation of range improvements is an activity that is categorically excluded from analysis in an EIS or Environmental Assessment. As timely and necessary, these proposals will be addressed through environmental analysis commensurate with categorically excluded activities and will be consulted on at a later date (This consultation includes analysis on the maintenance of existing range improvements for all allotments and limited new fence construction).

Environmental Consequences

Proposed Action

The following activities from the proposed action will be included in this analysis because they relate to vegetation management and may affect range conditions:

- Commercial tree removal, and mechanical fuel treatments across approximately 20,000 acres
- Thinning of largely younger trees across an additional 5,000 acres
- Prescribed burning of hazardous fuels, where ecologically appropriate, on up to 90,000 acres
- Connected actions: Fuels associated with silvicultural treatments (activity fuels) will treated with a suite of available tools including, but not limited to, mastication, removal, pile and burn, cutting and scattering limbs, and prescribed fire, seeding as part post-harvest restoration.

The following project activities will not be addressed because they do not directly relate to vegetation management that may affect range conditions. These issues will be addressed elsewhere.

- Approximately 1.5 miles of new system road will be constructed; 24 miles of system road will be reconstructed; and 26 miles of new temporary roads will be constructed.
- Riparian and flood plain restoration which may include road closure or modification, channel reconstruction, fencing, planting, conifer removal, in-stream structure placement, and bank stabilization.
- Connected actions: road maintenance and hazard tree cutting or removal.

Alternative 1 – No Action

There are no known direct, indirect or cumulative effects on range resources because of the No Action Alternative. Effects related to this alternative on range resources are primarily indirect in nature. Rangeland condition, livestock distribution, forage available for utilization and improvements will remain unchanged and consistent with existing management. Changes in livestock distribution through enhancement of transitory range will not occur.

Alternative 2 and 3

Project Design Features and Mitigation Measures

- Range–1 The range manager will work with the timber sale officer with respect to the timing and location of logging operations. Timber harvest within the project area is not anticipated to impact ongoing grazing operations. All gates must be closed while livestock are within the allotment adjacent to the harvest units.
- Range–2 There are numerous range improvements within the project area in addition to private land boundary fences in many locations. All improvements should be protected during timber harvest activities. If it is necessary to cut range fences, the purchaser must be required to immediately repair them to Forest Service standard. These standards are available and should be made a part of the timber sale contract.
- Range–3 No trees used as anchor trees along a fence line shall be marked for harvest.
- Range–4 If it is necessary to cut a fence to enter a harvest unit where livestock are present, the purchaser must be required to close and secure the fence each day at the end of work activities.
- Range–5 The botanist, invasive species specialist and range manager will work together to determine whether prescribed fire or other vegetation restoration activities will require resting portions of the pasture treated.
- Range–6 If any fences are damaged during burning operations, repairs must be made immediately to prevent livestock from entering areas outside of established allotments.
- Range–7 The range manager will work with fire management to determine timing and location of prescribed fire. Burn blocks should be planned in a manner that does not interrupt planned livestock management on the allotments. All burns will be coordinated with the District Range Management Specialist.

Fence construction (wildlife friendly)

- Range–8 Three and four-wire barbwire fence construction would consist of smooth wire on the lower wire at a minimum height of 16 inches above the ground. The maximum height of the topmost wire would be 42 inches above the ground. Spacing between the top wire and the next wire down would be a minimum of 12 inches for 3-wire construction, and a minimum of 10 to 12 inches for 4-wire construction.

Direct and Indirect Effects

All Treatments are common to both Altenatives 2 and 3, and the alternatives will be analyzed together. Alternative 3 will not treat with commercial harvest in Inventoried Roadless areas or designated Old Growth (MA15), so there will be less acres affected in Alternative 3.

Direct effects to rangeland resources from LJCRP activities include temporary loss of understory vegetation including forage plants, through ground disturbance from logging activities, crushing and piling related to logging activities and prescribed fire. Physical effects of prescribed fire, where soil is heated can create areas where soil biota such as ectomycorrhizal (ECM) fungi, desirable bacteria, and invertebrates are killed. Small slash piles result in moderate soil heating in the surface 5 to 10 cm (2 to 4 in). The range in reported temperatures does not suggest any major

changes in soil properties with the exception of potential root, seed bank, and microbial mortality. Large slash piles, especially those containing a high proportion of large-diameter wood result in high soil temperatures and long heat durations. Detrimental heating effects on soil properties should be expected in the top 10 cm (4 in) or more (Busse et al 2014). Forest underburning produces minimal soil heating except in areas where duff layers are completely consumed. Therefore, detrimental heat damage should not be expected in most cases. Grassland fires produce nominal soil heating. The dominance of fine fuels in these systems ensures that burn duration time is generally low and soil temperatures are minimal (Busse et al 2014). To protect range resources during prescribed fires, follow Range-5 regarding resting range after buring, Range-6 regarding repairing fences that are accidentally burned, and Range-6 to help coordinate the timing and placement of prescribed fire.

Indirect effects include increased risk of spreading invasive annual grasses and noxious weeds through road construction, grading, and rocking, logging related activities, and prescribed fire when seed sources are available. The introduction of seed sources from logging equipment, shoes and clothing of workers and recreationists, as well as by wildlife and livestock is also an issue where bare soil is exposed. Thinning logging, and prescribed fire may facilitate exotic species invasions by disturbing existing vegetation, exposing mineral soil, facilitating the spread of propagules, reducing shading, and increasing soil resource availability (Dodsen et al 2008) with the strongest response when a combination of thinning and burning is used (Metlen and Fiedler 2006). Pastures identified by Wallowa County through Indicators of Rangeland Health assessments as having more bare soil than expected, as determined by factors such as soil type, topography, and plant association, are at greater risk of having noxious weeds and invasive annual grasses introduced or increased through ground disturbance related to restoration activities. North Wildhorse pasture in Cold Springs allotment is of particular concern, since it is in HCNRA as well as the Wildhorse IRA. Project design for invasive plants: INVP–3 Avoid prescribed fire and ground disturbance from activities such as logging operations and road grading where invasive plant populations, including non-native invasive grasses, are found; INVP–5 No parking, decking or piling on established weed sites; INVP–6 All landings, burn piles, skid trails and other disturbed areas created as part of a this vegetation restoration project, will be rehabilitated and seeded as per Pacific Northwest Region October 2005 Invasive Plant Program Preventing and Managing Invasive Plants Prevention Standard 2, and FSM 2070.3 with the input and approval of local botanist; and INVP–7 Known invasive plant populations will be flagged and/or mapped prior to road grading and other road improvements, designation of parking areas and landings, and logging, with work overseen by the invasive species specialists. Equipment operators will receive maps with known sites and instructions to avoid flagged or otherwise identified areas; would reduce risk of spreading invasive non-native plants.
Loss of forage and understory canopy cover through logging and burning activities may require a period of rest prior to grazing, depending on the time of year treatments occur, how much bare soil is exposed, and the condition of understory plants after treatments. This will have to be determined by the range manager and botanist after treatments have been implemented.

The amount of forage/ understory vegetation depends on many factors, such as annual variations in precipitation, heat, soil, and competing vegetation. Low to moderate intensity fire may increase fire resilient grass species such as pinegrass (FEIS 2014). Benefits from silvicultural treatments and prescribed burning may include increases in forage and browse canopy cover. Relationships between tree canopy density and understory plant growth have been developed for

major forest cover types in Montana, similar to forest cover types in LJCRP. In general, a tree canopy that covers more than 50% of the open sky will shade out most understory plants rendering the site unproductive for grazing. Decreasing the amount of forest canopy cover to less than 50% results in a proportional increase in forage production until the tree canopy cover has been reduced to 10 - 20%. Understory vegetation in ponderosa pine forests increased proportionately to decreases in crown cover until a canopy cover of 20% was left. Further thinning resulted in no further understory increases. Canopy thinning in stands of Douglas-fir, on the other hand, showed continuous increases in forage production until the stand was clearcut (Kolb 1999). Young 1965 found that shrubs in dry upland forest (ABGR) had the highest cover when tree canopy was 21 to 35% and grass species were most productive between 0 and 20% tree canopy cover. Other studies show no such relationship (in Ponderosa pines stands with cover between 20 and 50 percent) (Krueger 1981). Long et al 2008 described an increase in forage cover in the spring in stands where tree canopy had been reduced, however by summer the forage cover had decreased due to desiccation. Treatments in Alternatives 2 and 3 will have the most impact where post treatment takes density to less than 40% cover. Moist upland forest treatments where density would be reduced to less than 40% canopy cover would occur on less than one percent of the LJCRP area. It is doubtful there will be enough reduction in cover to increase native forage grasses, such as elk sedge, pinegrass, Idaho fescue or blue-bunch wheatgrass in moist upland forest stands. However, there should be improvement in dry upland forest treatments where about 11 % of the total LJCRP area will have canopy cover taken to low density (below 40% canopy cover). Using a conservative estimate of 10% increase in forage for dry upland forest stands that are taken to low density, about 8% of the project area in alternative 2 would show increased forage production. In alternative 3, about 5% of the project area would show increased forage production. The amount of forage depends on many factors, such as annual variations in precipitation, heat, soil, and competing vegetation. Project design criteria Range-1, coordinating timber sale operations with the timber sale administrator will help avoid impacts to ongoing grazing operations; Range-2, 3 and 4 will help protect fences and keep livestock in planned locations.

Table: Acres of dry upland forest are projected to be at or below 40% canopy closure.

Allotments	Alternative 2	Alternative 3
AL-CUNNINGHAM	61	46
BUCK CREEK	41	32
CHESNIMNUS	5	5
COLD SPRINGS	1386	194
COUGAR CREEK	1351	1151
CROW CREEK	59	43
DAVIS CREEK	827	728
DOE CREEK	3	1
FINE	13	1
HUNTING CAMP	825	600
SWAMP CREEK	1848	1452
TABLE MOUNTAIN	677	577
TEEPEE ELK	987	401
Grand Total	**8083**	**5232**

See Appendix: for acres by pasture.

Cumulative Effects

Spatial and Temporal Context for Effects Analysis

For the effects analyses the spatial context being considered is the LJCRP area. The baseline year used for this analysis is the year 2014 as the existing condition. In this analysis, all past activities and events are included in the existing condition description. In the effects discussion, post treatment refers to the time the final activity is accomplished (assumed to be the year 2024), "short-term" effects refers to effects over the 10-year period from the time the final activity was accomplished (year 2034). Beyond 20-years we will be considering effects as "long-term" (year 2054).

Cumulative effects are discussed in terms of changes in the existing condition due to present and foreseeable activities, including the effects of the alternative being discussed. The time frame considered is approximately 10 years in the future at which time the majority of the actions proposed will have been completed and the responses to these actions has occurred.

Past, Present, and Reasonably Foreseeable Activities Relevant to Cumulative Effects Analysis

Project	Potential Effects	Effect Intensity	Rationale
Past, Present, and Future Timber Harvest	May initially reduce forage prior to increased productivity.	Moderate	Increase in disturbance due to the creation of log landings, skid trails, and increased access on roadways. Logging operations may limit use of and access to forage.
Prescribed Fire and Fuels Reduction	May initially reduce forage and create conditions where range needs to be rested.	Moderate	Prescribed burning has the potential to increase disturbance thus favoring invasive non-native plants, or reduce the cover of the invasive plants already in place and retard seed set, and in conjunction with ongoing treatment allow native plants to establish.
Large Fires and Wildfire Suppression	Large scale disturbance of vegetation.	High	Large wildfires can increase non-native annual grasses, introduce noxious weeds, decrease forage, and cause erosion, as well as destroy range improvements.

Past, Present and Future Timber Harvest

Silvicultural treatments are part of the landscape. From 1995 to 2013, LJCRP has had around 2000 acres of thinning and around 2400 acres of logging, including salvage and sanitation, less than five percent of the landscape. When activities from the last thirty years are mapped, it becomes apparent that the same areas have been treated repeatedly. About 45% of the LJCRP commercial treatments will return to previous treatment areas. Treatments create more open canopy and potentially more forage. Road grading, piling and landings associated with past

and proposed future vegetation treatments could temporarily restrict the movement of livestock and access to forage. Project design criteria Range–1 The range manager will work with the timber sale officer with respect to the timing and location of logging operations. Timber harvest within the project area is not anticipated to impact ongoing grazing operations. All gates must be closed while livestock are within the allotment adjacent to the harvest units and Range–5 The botanist, invasive species specialist and range manager will work together to determine whether prescribed fire or other vegetation restoration activities will require resting portions of the pasture treated, as well as WW LRMP and HCNRA CMP standards and guides will reduce negative effects associated with LJCRP.

Prescribed Fire

Prescribed fire can improve forage conditions if burning is conducted when native perennial grasses and forbs are dormant. Burning too hot, or when plants begin to grow, typically in the spring, can kill or retard native plants and promote weedy species. Prescribed fires must be planned to avoid damaging fences and water improvements. Project design criteria Range–5 The botanist, invasive species specialist and range manager will work together to determine whether prescribed fire or other vegetation restoration activities will require resting portions of the pasture treated, Range–6 If any fences are damaged during burning operations, repairs must be made immediately to prevent livestock from entering areas outside of established allotments and Range–7 The range manager will work with fire management to determine timing and location of prescribed fire. Burn blocks should be planned in a manner that does not interrupt planned livestock management on the allotments. All burns will be coordinated with the District Range Management Specialist will reduce negative effects associated with LJCRP.

Wildfire

Wildfires can increase forage in locations where they were low to moderate intensity. In forested range, high intensity fire generally reduces understory vegetation for a number of years (FEIS 2014). Cache Creek (2012), Jim Creek (2006), Jim Creek (2000), and Teepee Butte (1988) cover around 70% of the HCNRA portion of LJCRP. Joseph Creek/Starvation Ridge (1986) burned about 31,000 acres in the Wallowa District portion of the LJCRP. Post-fire seeding that is not targeted to specific areas of concern, such as the aerial seeding of non-native forage species after the Joseph/Starvation fire, may have had negative impacts on native grass species. Without any seeding, bluebunch wheatgrass generally regains pre-fire cover the year after it burns. Idaho fescue can take a few years to regain pre-fire cover, but other components of Idaho fescue communities recover in the first year after burning (Johnson and Swanson 2005). Recommendations on changes in the timing and location of grazing in response to wildfire are outside the scope of this project; however, Whitman LRMP standards and guides and HCNRA CMP standards and guides for range will be followed.

Grazing and Ungluate Distribution

Ungulates tend to congregate in riparian areas, drawn by good forage and browse, water, and thermal cover. Current range management practices use springs, ponds, salting, fences, and

herding to encourage livestock movement (Wallowa County 2014). Elk and deer also benefit from additional water sources and salt. LJCRP would create more open forest in the uplands, as well as improve grasslands with savannah treatments to remove encroaching conifers and prescribed fire. Better quality upland forage in addition to current management practices will help keep livestock dispersed on the landscape. In addition LRMP and CMP standards and guides as well as project design criteria for range that recommend range management communication with timber sale personnel, fire management, botanical and noxious weed specialists, and protection of range structures such as fences and spring boxes would prevent negative effects related to LJCRP.

Summary of Cumulative Effects by Alternative

Alternative	**Effects on Grazing and Rangeland Management**
Alternative 1 No Action	Over time secondary range would continue to decrease and forage plants would be reduced through displacement and reduced ecosystem health. As conditions change over time within the allotments, livestock use would likely be reduced through additional NEPA allotment analysis with the loss of forage.
Alternative 2 Proposed Action	Some short –term limitations on livestock grazing may occur where treatments affect large acreages. As implementation of the proposed action occurs, it is expected that increased retention of desirable species, vegetation density, and plant vigor of desired native vegetation would increase and/or improve.
Alternative 3 Management Area Restrictions, No Forest Plan Amendments	Same as the Proposed Action. Restricted treatment options in some management areas are expected to reduce effectiveness of treatment and therefore have a greater impact on grazing management over time.

Appendices

Appendix: References

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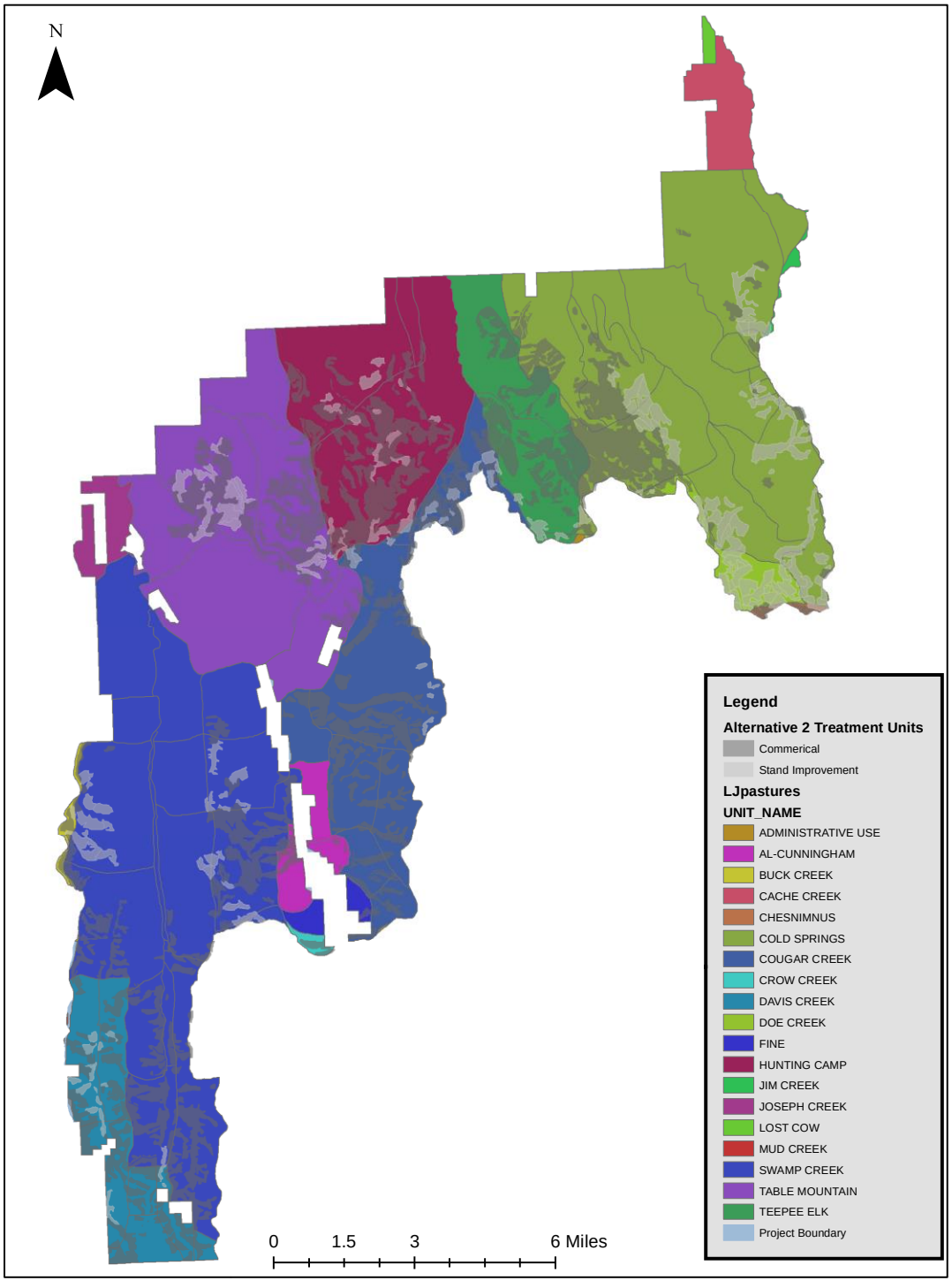
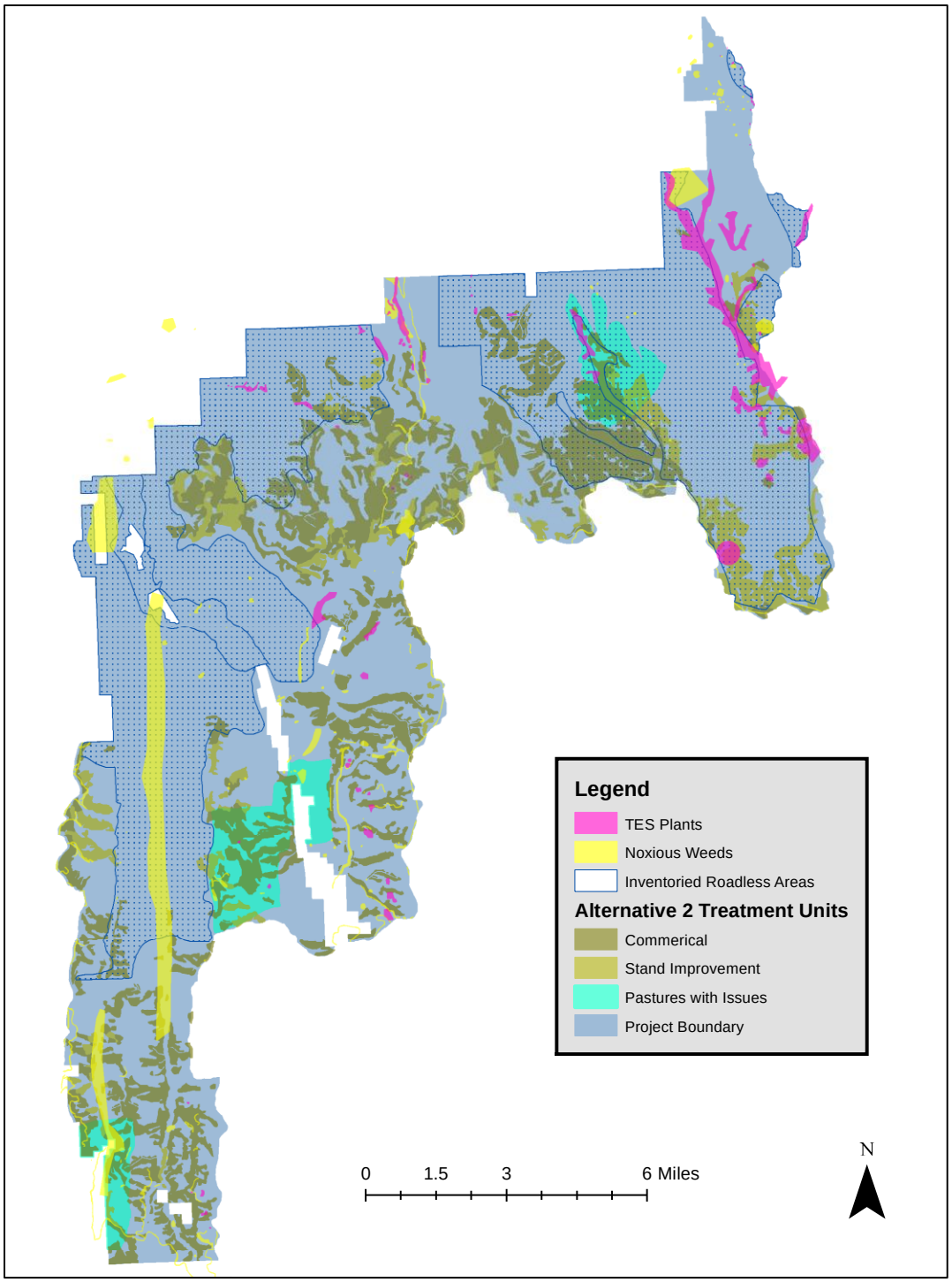
Appendix: Maps Range Allotments in LJCRP

LJCRP Allotments



Appendix: Maps: Pastures at Risk

Allotment Pastures With More Bare Soil Than Expected



Appendix: Range improvements proposed by Wallowa County during the Lower Joseph Watershed Analysis (Wallowa Resources 2104). Because all of the proposals either fell under maintenance or categorical exclusion, they were eliminated from this analysis.

Type	Location	Land Owner	Description	USFS Name	USFS Number	Comments
Roads	Davis Cr. rd #4602000	USFS	Spot rocking, rolling dips, -DO NOT CLOSE			
Weeds	Davis Cr. rd # 4602000 (DKW)	USFS	Knappweed			
Roads	Swamp Cr. rd# 460050	USFS	Spot rocking			
Water	Swamp Cr.	USFS	Rocking Water Gap			
Water	Miller Ridge	USFS	Water Development	new developement?	no assigned number	Al-Cunningham Allotment
Weeds	Chesnimnus Cr	USFS	Scotch Thistle			
Weeds	Chesnimnus Cr.	USFS	Scotch Thistle			
Water	Hunting Camp Ridge rd# 4655200	USFS	Rebuild Spring	Lower Tamarack	16023511	
Water	Hunting Camp Ridge rd# 4655150	USFS	Clean Pond	new development?	no assigned number	
Water	Hunting Camp Ridge rd# 4655150	USFS	Rebuild Spring	Tamarack Spring	16023501	
Water	Bull Canyon	USFS	Clean Pond	Basil Pond	16025023	
Water	Bull Canyon	USFS	Clean Pond	Mathis Pond	16025024	
Water	Bull Canyon	USFS	Clean Pond	Rod's Spring	16025044	
Weeds	Thorn Hollow	USFS	Scotch Thistle			
Water	Rock Creek	USFS	Spring repair, needs trough	Rock Creek Spring	16025504	
Water	Long Ridge rd# 4600570	USFS	Spring Development-Trough	new development or existing needs number	no assigned number	
Water	Rock Cr.	USFS	Spring Development in draw	new development, project needs defined	no assigned number	TeePee Elk Allotment
Water	Cold Springs Cr.	USFS	Pond Maintenance	Horse Creek Pond	16041221	
Water	Cold Springs Cr.	USFS	Pond Maintenance	Gaillards Pond	16041218	
Water	Cold Springs Cr.	USFS	Pond Maintenance	Grasshopper Pond	16041215	
Water	Cold Springs Cr.	USFS	Pond Maintenance	Upper Cabin Pond	16041250	

Type	Location	Land Owner	Description	USFS Name	USFS Number	Comments
Water	Cold Springs Cr.	USFS	Pond Maintenance	Old Joes Pond	16041214	
Water	Cold Springs Cr.	USFS	Pond Maintenance	Joe Pond	16041217	
Water	Trail Cr. rd # 4680212	NPT	Pond Maintenance	Nez Perce Tribe	not on FS	
Water	Frog Pond rd # 4680	USFS	Pond Maintenance	Frog Pond	16041238	
Water	Cold Springs Ridge	USFS	Pond Maintenance	Beef Pasture	16041230	
Water	Road Gulch	NPT	Pond Maintenance	Nez Perce Tribe	not on FS	
Water	Horse Cr.	NPT	Pond Maintenance	Nez Perce Tribe	not on FS	
Water	Horse Cr.	NPT	Pond Maintenance	Nez Perce Tribe	not on FS	
Roads	Cottonwood Cr.	NPT	Road sluff- Gravel			
Water	Starvation Ridge Blowout Pond		Pond Maintenance	pond	16021705	
Water	Starvation Ridge # 16024702		Pond Maintenance	pond	16024702	
Water	Starvation Ridge Bear Pond		Pond Maintenance	Bear pond	16024718	
Water	Starvation Ridge Childer Pond		Pond Maintenance	Childer Pond	16024717	
Water	Starvation Ridge Dead Tree Pond		Pond Maintenance	Dead Tree Pond	16024716	
Water	Red Fir Pond # 16024736		Spring, Needs Trough	Red Fir Pond	16024736	
Water	Red Fir Pasture, Swamp Allotment	USFS	Rebuild spring	Smooth Canyon Spring	16024731	Tom Birkmaiers list
Water	Beef Pasture, Swamp Allotment	USFS	Rebuild Spring	Nells Canyon Spring	16024724	Tom Birkmaiers list
Water	Beef Pasture, Swamp Allotment	USFS	Rebuild Spring	Spring	16024725	Tom Birkmaiers list
Water	Beef Pasture, Swamp Allotment	USFS	Rebuild Spring	Short Fork Spring	16024723	Tom Birkmaiers list
Water	Beef Pasture, Swamp Allotment	USFS	Rebuild Spring	Nells Spring	16024722	Tom Birkmaiers list
Water	Baker Gulch	USFS	Rebuild Spring	Rachael Spring	16024778	Tom Birkmaiers list
Water	Starvation Spring	USFS	Rebuild Spring	Starvation Spring	16021716	Karl Pattons list

Type	Location	Land Owner	Description	USFS Name	USFS Number	Comments
Water	Elk Creek Pasture, Davis Ck Allotment	USFS	Develop Spring	new development	no assigned number	Karl Pattons list, outside project area
Water	Elk Creek Pasture, Davis Ck Allotment	USFS	Construct pond	new development	no assgned number	Karl Pattons list, outside project area

Appendix: Acres by Mega-PVG in Allotments/Pastures

Allotments/Pastures	Dry UF	Dry UH	Dry US	Meadows	Moist UF	Moist UH	non veg	Total Pasture/ Allotment Acres
AL-CUNNINGHAM	434	842		0	3	11		1291
HORSE	19	12		0		0		31
NORTH ALFORD	47	39		0		0		85
SHOOT CANYON	132	362		0	2	11		507
SOUTH ALFORD	197	217		0		0		415
SUMAC	39	212		0	1	0		252
BUCK CREEK	152	9		0	66	10		237
HIGHWAY I	152	9		0	66	10		237
CACHE CREEK*	302	1251	20	0	5	43		1621
CACHE CREEK	302	1251	20	0	5	43		1621
CHESNIMNUS	53	8		0	43	15		119
DEVILS RUN	12	4		0	22	6		45
POISON	40	5		0	21	9		75
COLD SPRINGS*	9866	8671	181	0	2432	462		21612
BEEF PASTURE	62	286		0		0		349
COOK CREEK	2	43		0	0	0		45
COW CAMP	12	55		0		0		66
HORSE CREEK	139	487		0		0		625
HORSE PASTURE	38	61		0		0		98
LOWER BASIN	898	1003	173	0		35		2110
LOWER BEAR	323	312		0	75	105		815
LOWER COTTONWOOD	1318	1924		0	64	56		3363
NORTH COLD SPRINGS	1781	2222		0	170	73		4246
NORTH WILDHORSE	1000	488	6	0	279	69		1842
ROAD HOLDING PASTURE	14	52		0	43	0		109
SOUTH COLD SPRINGS	1823	772		0	433	52		3081
SOUTH WILDHORSE	1538	731	1	0	794	42		3106
UPPER COTTONWOOD	918	235		0	573	29		1756
COUGAR CREEK	5855	2878	35	0	1202	775	32	10778
BALDWIN	704	110		0	705	38		1556
BONER	308	0		0		212		520
BREEDING PASTURE	251	22		0		394		668
COUGAR	2915	1449	17	0	455	21		4857
MUDDY	707	375		0	1	93		1176
PEAVINE	2			0	0	0		2
SUMAC	696	533		0	29	17		1274

TRAP CANYON	273	388	18	0	13	0	32	724
CROW CREEK	96	1		0		72		168
ELK CREEK/SPECIAL USE	96	1		0		72		168
DAVIS CREEK	3198	896		131	577	191		4993
BENNETT	290	24		117		0		432
DAVIS WEST	510	306		12	378	26		1233
DAVIS EAST	728	199		1	101	82		1112
DAVIS SOUTH	698	134		0	75	73		980
ELK CREEK	126	18		0		9		153
HILLSIDE	286	109		0		0		395
STARVATION SPRING	561	105		0	22	1		689
DOE CREEK	644	212		0	390	66		1311
FAIRCHILD	644	212		0	390	66		1311
FINE	165	0		0		317		483
HOME PLACE	28			0		178		206
WEST	138	0		0		139		277
HUNTING CAMP	4877	2062		0	2485	806		10230
HOLDING PASTURE	165	6		0	23	189		384
KIRKLAND	3202	861		0	2380	78		6520
TAMARACK	1509	1196		0	82	539		3326
JIM CREEK*	42	74		0		0		116
WEST	42	74		0		0		116
JOSEPH CREEK	400	468	89	0		24		981
JOSEPH CREEK	400	468	89	0		24		981
LOST COW*		150	0	0		0		150
LOST COW		150	0	0		0		150
MUD CREEK	0	1		0	0	3		4
MUD CREEK	0	1		0	0	3		4
SWAMP CREEK	12283	9985	38	230	264	351	15	23165
BAKER GULCH	510	632	9	0	0	34	15	1199
BARNEY FLAT	775	677		0	24	0		1476
BEEF PASTURE	873	1233		2		50		2157
BENNETT	812	282		131		1		1226
BUCK	977	902	14	0	154	10		2056
HORSE PASTURE	11			0		4		15
LITTLE ELK CREEK	1668	803		0		103		2574
LOWER DAVIS	1405	1352		0	21	60		2838
LOWER SWAMP	407	896		4	0	10		1318
MILLER SPRING	1646	681	15	0	41	0		2383
RED FIR	227	357		0		0		585
RIPARIAN BELOW COW	14	20		0		0		35

CAMP								
SNAKE CANYON	496	609		0		0		1105
SWAMP CREEK	143	15		19		7		184
UPPER DAVIS	1514	1062		20	25	72		2694
UPPER SWAMP	618	414		3		0		1035
UPPER SWAMP RIPARIAN	187	49		50		0		286
TABLE MOUNTAIN	5174	6410	635	0	1467	912		14598
CORRAL SPRINGS	1399	517		0	627	87		2630
DOG FIGHT	143	59		0	121	11		334
HORSE PASTURE RIDGE	383	844		0	1	214		1442
JOSEPH BREAKS	1116	2817	27	0	68	173		4201
TABLE MOUNTAIN	1414	392	12	0	534	412		2763
THORN HOLLOW	314	1274		0	64	0		1652
WILDER	406	507	596	0	51	15		1576
TEEPEE ELK	2453	2066	9	0	626	137		5291
ELK PASTURE	15	8		0	69	0		92
HOLDING PASTURE	89	268	4.5	0		1		362
LONG RIDGE	1626	330		0	557	83		2596
ROCK CREEK	723	1461	4	0	0	53		2241

* Allotment administered by HCNRA
Dry UF = Dry Upland Forest, Dry UH = Dry Upland Herbland, Dry US= Dry Upland Shrubland, Moist UF= Moist Upland Forest, Moist UH= Moist Upland Herbland, non-veg = unvegetated areas.
Gray shading denotes Allotments, unshaded under the allotments are the allotment pastures.

Appendix: Forage Acres by Pasture

Allotment Pastures	**Alt 2Dry UF**	**Alt 3Dry UF**
AL-CUNNINGHAM	**61**	**46**
HORSE	11	8
NORTH ALFORD	40	29
SUMAC	9	9
BUCK CREEK	**41**	**32**
HIGHWAY I	41	32
CHESNIMNUS	**5**	**5**
POISON	5	5
COLD SPRINGS	**1386**	**194**
LOWER BASIN	222	0
LOWER BEAR	2	0
NORTH COLD SPRINGS	83	52
NORTH WILDHORSE	351	58
SOUTH WILDHORSE	729	84
COUGAR CREEK	**1351**	**1151**
BALDWIN	170	162
BONER	70	62
BREEDING PASTURE	78	64
COUGAR	540	516
MUDDY	227	155
SUMAC	241	167
TRAP CANYON	24	24
CROW CREEK	**59**	**43**
ELK CREEK/SPECIAL USE	59	43
DAVIS CREEK	**827**	**728**
BENNETT	120	107
DAVIS WEST	76	63
DAVIS EAST	207	204
DAVIS SOUTH	162	135
ELK CREEK	41	34
HILLSIDE	104	77
STARVATION SPRING	117	109
DOE CREEK	**3**	**1**
FAIRCHILD	3	1
FINE	**13**	**1**
HOME PLACE	13	1
HUNTING CAMP	**825**	**600**
KIRKLAND	642	588
TAMARACK	183	12

Allotment Pastures	**Alt 2Dry UF**	**Alt 3Dry UF**
SWAMP CREEK	**1848**	**1452**
BARNEY FLAT	25	24
BEEF PASTURE	70	36
BENNETT	242	198
LITTLE ELK CREEK	455	373
LOWER DAVIS	47	32
MILLER SPRING	541	457
UPPER DAVIS	266	163
UPPER SWAMP	173	139
UPPER SWAMP RIPARIAN	29	29
TABLE MOUNTAIN	**677**	**577**
CORRAL SPRINGS	202	156
DOG FIGHT	1	0
HORSE PASTURE RIDGE	2	0
JOSEPH BREAKS	28	16
TABLE MOUNTAIN	330	318
THORN HOLLOW	52	28
WILDER	62	59
TEEPEE ELK	**987**	**401**
HOLDING PASTURE	32	0
LONG RIDGE	709	401
ROCK CREEK	247	0
Grand Total	**8083**	**5232**